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Law and regulations concerning the sale of commercial fertilizers in the state of West Virginia. Analyses.

John A. Myers

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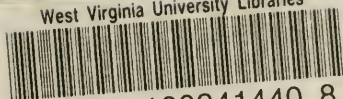
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WEST VIRGINIA

Agricultural Experiment Station,

MORGANTOWN, W. VA.

LAW AND REGULATIONS CONCERNING THE SALE OF COM-
MERCIAL FERTILIZERS IN THE STATE OF WEST
VIRGINIA. ANALYSES.

SEPTEMBER, 1892.

JOHN A. MYERS, Director.



CHARLESTON, W. VA.
MOSES W. DONNALLY, PUBLIC PRINTER,
1892.

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INSPECTION OF COMMERCIAL FERTILIZERS.

The law regulating the inspection and sale of fertilizers in West Virginia does not appear to be fully understood by manufactures and others. There are so many misapprehensions upon the subject that I deem it advisable to print the law in full together with our arrangements for conducting the analytical work and inspection.

LAW.

AN ACT concerning Commercial Fertilizers, and repealing chapter twenty-five of the Acts of the Legislature of West Virginia of 1879. (Chap. LXXII)

[Passed March 6, 1891.]

Be it enacted by the Legislature of West Virginia :

1. Every person or company who shall sell, offer or expose for sale, in this State, any commercial fertilizer or manure, shall affix conspicuously to every package thereof a plainly printed statement, clearly and truly certifying the number of net pounds of fertilizer in the package, name, brand, or trade mark under which the fertilizer is sold, the name and address of the manufacturer, the place of manufacture, and a chemical analysis, stating the percentage of nitrogen or its equivalent in ammonia, of potash soluble in distilled water, and of phosphoric acid in available form, soluble in distilled water, and reverted, as well as the total phosphoric acid. In the case of those fertilizers which consist of other cheaper materials, said labels shall give a correct general statement of the composition and ingredients of the elements relied upon, contained in the fertilizer which it accompanies. If any such fertilizer be sold in bulk, such printed statement shall accompany and go with every lot and parcel sold, offered or exposed for sale.

2. Before any commercial fertilizer is sold, offered or exposed for sale in this State, the manufacturer, importer or party who causes it to be sold, exposed or offered for sale, shall file with the Director of the West Virginia Agricultural Experiment Station a certified copy of the statement named in section one of this Act,

and shall also deposit with said Director, a sealed glass jar or bottle, or sealed tin can, containing not less than one pound of fertilizer named and described in said statement, accompanied by an affidavit that it is a fair average sample thereof. The making of any affidavit required by this chapter falsely, shall be perjury.

3. The manufacturer, importer, agent or seller of any brand of commercial fertilizer or material used for manurial purposes, shall pay for each brand at the time he files the statement required in section one of this Act, an analysis fee of ten dollars for each of the fertilizing ingredients claimed to exist in each and every brand as fertilizer which he sells, offers or exposes for sale within this State, provided that whenever the manufacturer or importer shall have paid the analysis fee herein required, for any particular brand of fertilizer, no agent or seller shall be required to pay any other or further analysis fee for said brand.

4. The analysis fee required to be paid by section three of this act shall be paid to the Treasurer of the West Virginia University for the use of the Agricultural Experiment Station, and the party making such payment shall take from said Treasurer triplicate receipts therefor, one of which he shall retain, and the other shall be deposited, one with the Director of the Agricultural Experiment Station, and the other with the Secretary of the Board of Regents of the West Virginia University, and by them filed and preserved in their respective offices.

5. Immediately after the filing of the receipt aforesaid with the Director of the Agricultural Experiment Station, said Director shall issue a certificate to the party making such payment, stating the amount of fees paid, and the name, brand or trade-mark under which the fertilizer is sold, the name and address of the manufacturer or importer, the place of manufacture, the name and place of business of the dealer, and the chemical analysis as set forth in the statement by section one of this act, and that the applicant for said certificate is authorized to sell said fertilizer within the State of West Virginia for the period of one year from the first day of January to the 31st day of December, inclusive. Said certificate may be issued at any time for and during the current year, and may be issued during the month of December for the year commencing on the first day of January thereafter.

6. It shall be the duty of the Director of the West Virginia Agricultural Experiment Station to make or cause to be made a chemical analysis of every sample of commercial fertilizer so furnished him, and he shall print the result of such analysis in the form of a label or tag. Such printed label or tag shall set forth the name of the manufacturer, the place of manufacture, the brand of the fertilizer, and the essential ingredients contained in said fertilizer, expressed in terms and manner approved by the Director, together with a certificate from the Director, setting forth that said analysis is a true and complete analysis of the sample furnished him of such brand of fertilizer of the ingredients claimed to be contained therein. And he shall also place upon each label or tag the money value

per ton of such fertilizer, computed from its composition, as he may determine. The Director shall furnish such labels or tags in quantities of one hundred, or multiple thereof, to any person or company complying with this act, and desiring to sell, offer or expose for sale, any commercial fertilizer in this State, and shall receive therefor the sum of fifty cents for every one hundred so delivered, and shall without delay pay the same to the Treasurer of the West Virginia University, for the use of the Agricultural Experiment Station, and take duplicate receipts therefor, one of which he shall retain and the other he shall deliver to the Secretary of the Board of Regents, who shall file and preserve the same in his office.

7. The Board of Regents of the West Virginia University shall expend the money received under the provisions of this act in meeting the legitimate expenses of the Station, in making analyses of fertilizers, in experimental tests of same, and in such other experimental work and purchases as shall inure to the benefit of the farmers of this State, and shall include in their annual report a statement of the receipts and disbursements thereof.

8. The Director of said Experiment Station is hereby authorized in person or by deputy to take samples for analysis from any lot or from any commercial fertilizer which may be in the possession of any dealer in this State. And he is hereby authorized to prescribe and enforce such rules and regulations as he may deem necessary to carry fully into effect the true intent and meaning of this act; and any agriculturalist, a purchaser of any commercial fertilizer in this State, may take a sample of the same under the rules and regulations of the Director of the said Experimental Station, or forward the same to the Experimental Station for analysis, and if the Director has reason to believe that the manufacturer of, or dealer in, said fertilizer has made any false or fraudulent representation in regard to said fertilizer, he shall cause the said sample to be analysed free of charge, and certify the same to the person forwarding the sample.

9. Said Director shall also publish, by bulletin, the brand, name and location of the manufacturer, and chemical analysis of every fertilizer analysed or caused to be analysed by him. Said last publication to be made, if practicable, before the time at which said fertilizer is to be applied to the soil.

10. Any manufacturer or vendor of any chemical fertilizer who shall sell, or offer or expose for sale, any commercial fertilizer without having previously complied with the provisions of this act hereinbefore set forth, shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be fined not less than fifty nor more than five hundred dollars.

11. Any company, firm or person who shall wilfully remove from or deface or change any label, or tag, or brand affixed to any package of fertilizer under the provisions of this act, before such fertilizer has been used for manurial purposes, or who shall sell such fertilizer without such label or tag being affixed thereto at the time of sale, shall be deemed guilty of a misdemeanor, and upon conviction

The following is the form of affidavit required under Sec. 2 of the law. Blank copies of the same will be furnished by the Director free of charge upon application.

"Manufacturers or dealers sending samples of commercial fertilizers for analysis under the 'Act Concerning Commercial Fertilizers' in West Virginia, will please fill out and send with the sample the following affidavit. Addressed to Dr. John A. Myers, Morgantown, W. Va.:

I,, of, do hereby certify that the sample....
of the following named Commercial Fertilizer..... sent this day by to Dr. John A. Myers, Morgantown, W. Va., contained in
..... correctly labeled and securely sealed, for analysis under the Act of the Legislature of West Virginia, "Concerning Commercial Fertilizers,"
to the best of my knowledge and belief truly and fairly represent the chemical composition of the fertilizer as manufactured and offered for sale by us
in the State of West Virginia. The manufacturers guarantee the following minimum analysis:

Name and trade-mark of fertilizer.	Manufacturers name and address.	Name and address of sender.	Minimum per cent. of nitrogen guaranteed.	Minimum per cent. of soluble phosphoric acid guaranteed.	Minimum per cent. of converted phosphoric acid guaranteed.	Minimum per cent. of available phosphoric acid guaranteed.	Minimum per cent. of total phosphoric acid guaranteed.	Minimum per cent. of potash guaranteed.	Minimum weight of package guaranteed.
1									
2									
3									
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Given under my hand and seal this day of 189..... Signed..... State of.....
I, a Notary Public within and for the county of.....
do hereby certify that the above statement was sworn to before me by.....
on this day of 189.....
Given under my hand and official seal as Notary Public, this day of 1891.
NOTARY SEAL
Notary Public

thereof, shall be fined not less than ten nor more than fifty dollars for each offense.

12. Any company, firm or person who shall remove from or cause to be removed from any package of commercial fertilizer, any statement, label or tag affixed thereto under the provisions of this act, and affix or cause the same to be affixed to any other package of commercial fertilizer, shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be fined not less than ten nor more than fifty dollars for each offense.

13. Any company, firm or person violating any of the provisions of this act, or who fails to comply with the requirements of this act, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall, when no other penalty is prescribed, be fined not less than ten nor more than one hundred dollars for each offense. But this act shall not be construed to apply to any one who manufactures fertilizers for his own use and not for sale.

14. The Director of said Experiment Station shall report to the prosecuting attorney of the county wherein the offense was committed, all violations of the provisions of this act, and failure to comply therewith, and a copy of any statement, label or tag required to be filed with said Director, or prepared by him, and any analysis made or caused to be made by him, when duly certified by said Director, shall be received in evidence in any prosecution of a suit for any violation of the provisions of this act.

15. That chapter 25 of the Acts of the Legislature of West Virginia, passed on the 4th day of March, 1879, entitled "An act to protect the purchasers of fertilizers in this State," be and the same is hereby repealed.

REGULATIONS FOR FARMERS.

The following blank is supplied to farmers, free of charge, who may wish to submit samples under section 8 of this Act:

Farmers sending samples of fertilizers for analysis under the Act of the Legislature of West Virginia, passed March 6th, 1891, will please fill out and send the following blank by mail to Dr. John A. Myers, Morgantown, W. Va.:

I hereby certify that the sample of fertilizer known and sold as

.....
(Name of Brand.)

was bought by me of.....
(Dealer's Name and Address.)

West Virginia....., and that it rep-
(Date of Purchase.)

resents fairly the quality of the fertilizer as delivered to me. The fertilizer is guaranteed by the manufacturer to have the following chemical composition:

.....
(Copy the Analysis.)

It is sold at \$..... per ton cash or \$..... per ton upon time.
The Director's tag taken from one of the packages is enclosed with the sample.

Sign,

Date,189..

Address.....

I hereby certify that I witnessed the taking of the above named sample by....., and that I believe it represents fairly the quality of fertilizer bought by him, and sampled for analysis. I further state that I have no financial interest in the above transaction.

Sign,
(Name of some other Person.)

Date,189.,

Address,

NOTICE.—Farmers and others in taking samples for Analysis will please follow closely the directions given for sampling fertilizers."

JOHN A. MYERS, *Director*.

DIRECTIONS FOR TAKING SAMPLES OF FERTILIZERS FOR ANALYSIS.

"1st. All analytical work is based upon the supposition that the chemist receives a fair sample for analysis, and all persons should exercise special care in securing an average, fair sample, which may best be accomplished.

(A) *If from bulk—*

By taking a shovel or scoop full from a number of places in the pile and rapidly and thoroughly mixing these quantities together, then taking the samples from this mixed mass. The mixing may be done upon a clean floor with the shovel or scoop by repeatedly shoveling the heaps together after separating it into several parts. The whole operation should be continuous and rapid so that there will be no appreciable change of moisture. The mixing should be sufficient to cause soft or moist masses to be broken up and thoroughly inter-mixed with the body of the fertilizer, but care should be observed not to pulverize hard dry lumps so as to change the physical character of the fertilizer. In other words the chemist should receive a fair sample both as to chemical and physical properties.

(B) *If from barrels, sacks or packages.*

By opening the sack, barrel or package and thoroughly mixing the contents down to about one-half of its depth by means of a shovel or scoop, then if need be withdrawing several scoops full and thoroughly mixing upon a floor exactly as under "A." It is best to take scoops or shovels full from several sacks or packages and mix these as directed, then take the same for analysis from the mixed mass. Observe the conditions given under "A." Fair samples are best secured from fresh packages, and *farmers will do well to draw all samples immediately after purchasing.*

2nd. Care should be observed to attend to the drawing of the sample without delay and sample should be promptly selected, labeled and shipped. In the case of a manufacturer or dealer this sample is accompanied by the affidavit required by law (see directions to manufacturers.) If the sample be sent by a farmer, for mutual protection, *it is best, though not required*, that it be drawn and sealed in the presence of a disinterested party who should join the farmer in certifying that the sample fairly represents the goods as purchased by him. *In the case of the farmer there is no charge for the analysis, but the express charges upon the sample should be prepaid.* Proper blanks will be provided by the Director free of charge for all farmers applying for them.

Samples received at the Experiment Station from Manufacturers will be analysed in the order received. *Manufacturers and dealers are, therefore, urged not to wait to the last moment to send in their samples, but to send them as soon as possible.*

INSTRUCTIONS TO MANUFACTURERS AND GENERAL AGENTS.

Manufacturers of Commercial Fertilizers selling their goods in this State, will please observe the following points in complying with the Act of the Legislature of West Virginia, passed March 6 h, 1891, and now in force:

1st. A compliance with the law requires that before any commercial fertilizer is sold, offered or exposed for sale in this State, the manufacturer, importer or party who causes it to be sold, exposed or offered for sale, shall file an affidavit with the Director of the West Virginia Agricultural Experiment Station, at Morgantown, W. Va., giving a correct statement of the net pounds in the packages, the name of the brand or trade mark under which the fertilizer is sold, the name and address of the manufacturer, the place of manufacture, and the chemical analysis stating the percentage of nitrogen, or its equivalent in ammonia, the percentage of potash soluble in distilled water, and the percentage of phosphoric acid in available form, soluble in distilled water, and reverted, as well as the total phosphoric acid. In the case of those fertilizers which consist of other cheaper materials, the affidavit shall give a correct general statement of the composition and ingredients of the elements in the fertilizer relied upon to produce fertilizing effect upon the soil.

*2d. The manufacturer is required to send with the affidavit a fair sample of the fertilizer in a sealed jar, bottle or tin can for analysis. An ordinary quart fruit jar or can filled with a fair sample of the fertilizer will answer. Each can or jar should be properly sealed, labeled and packed, and shipped prepaid by express to Dr. John A. Myers, Morgantown, W. Va.

3d The manufacturer is required to pay at the time of filing the affidavit an analysis fee of \$10 for each and every fertilizing ingredient claimed by him. If he claims potash, phosphoric acid and nitrogen, it is \$10 for each, or \$30 for a complete fertilizer, consisting of all three of the above named elements of plant food. This fee should be sent in a draft upon New York or Baltimore, payable to "The Treasurer of the West Virginia University."

4th. The manufacturer is required to place a label or tag upon each package, giving the name of the brand, its correct net weight, analysis and commercial valuation per ton. These labels are provided only by the Director of the West Virginia Agricultural Experiment Station, after analyzing the fertilizer, are regularly numbered and can only be had by the parties filing the affidavit before mentioned. The law establishes the price at 50 cents per 100

*Manufacturers will please keep a sample of the same lot for analysis by their own chemist.

labels or tags. Manufacturers requiring these tags or labels should indicate to the Director the number of each kind required, and send a check payable to John A. Myers, Director, for the amount. They will be sold in packages of 100 each, and manufacturers will please order by even hundreds.

5th. *The fertilizer inspection begins with January 1st of each year, and the manufacturers should comply with the law promptly at that time.* By doing so they give the chemist time to analyze the samples before the trade for the spring opens, and the results can be published for the spring trade.

Manufacturers and agents will therefore please to take immediate steps to comply with the above indicated provisions, which are intended to guide them. The Director will furnish the necessary blanks for complying with the law, free of charge, and will aid the manufacturers in any way in his power to comply with its requirements. All affidavits and applications for labels should be filed as soon as possible.

Address all communications to

DR. JOHN A. MYERS,
Morgantown, W. Va.

VALUATIONS FOR 1892.

The commercial valuation of fertilizers is based upon the average retail price of the ingredients from which they are compounded. We are aware of the fact that there are sometimes sudden fluctuations in the prices due to speculation, variations in the supply and demand, etc., but we are confident that the valuation given below should fairly represent the average price at which the fertilizers may be retailed in this State. *By proper negotiations in many cases where favorable freight rates prevail, the fertilizer may be bought for less than these prices.*

TRADE VALUES OF FERTILIZING INGREDIENTS IN RAW MATERIALS AND CHEMICALS FOR 1892.

Nitrogen In Ammonia Salts,	19c.
“ In Nitrates	17c.
Organic Nitrogen In dry and fine ground fish meat and blood,	19c.
In cottonseed meal and castor pumice,	15c.
In fine bone and tankage,	16½c.
In fine medium bone and tankage,	13c.
In medium bone and tankage,	10½c.
In coarse bone and tankage,	8½c.
In hair, horn shavings and coarse fish scrap,	8c.
Phosphoric acid soluble in water,	8c.
Soluble in citrate of ammonia (reverted),	8c.
In ground fish, fine bone and tankage,	7c.
In fine medium bone and tankage,	6c.

In medium bone and takage,	5c.
In coarse bone and tankage,	4c.
In fine ground rock Phosphate,	2c.
Potash as high grade sulphate and in forms free from Muriates (or chlorides),	6c.
As Kainite,	5c.
As Muriate,	5c.

TRADE VALUE OF MIXED FERTILIZERS AND SUPERPHOSPHATES OF HIGH GRADE.

Nitrogen	19c.
Available Phosphoric Acid	8c.
Insoluble Phosphoric Acid	3c.
Potash	5c.
Phosphoric Acid in fine ground bone, i. e. passes through 1-25 inch mesh sieve,	4½c.
Phosphoric Acid in medium ground bone, i. e. passes through 1-16 inch mesh sieve, but not through 1-25 inch mesh sieve,	4c.

The commercial value of a fertilizer is found by multiplying the number of pounds of each ingredient per ton as shown by analysis by the price of each, and taking the sum of these products, For example we have the following analysis :

Moisture	11.50 per cent.	*
Soluble phos. Acid.	9.00 " "	
Reverted " "	2.50 " "	
Available " "	11.50 " "	
Insoluble " "	1.00 " "	
Total " "	12.50 " "	
Nitrogen	2.00 " "	
Potash	3.00 " "	
Available Phosphoric Acid	11.50x20x8-	\$18.40.
Insoluble " "	1.00x20x3-	0.60.
Nitrogen	2.00x20x19-	7.60.
Potash	3.00x20x5-	3.00.

Commercial value per ton \$29.60.

This does not represent the Agricultural value of the fertilizer, which depends upon the crop, soil, weather, etc., as well as upon the character and amounts of the ingredients.

With January 1st, 1893, a new table of valuation will be adopted. Owing to the fluctuations in the price of Phosphate the valuation of phosphoric acid appears to be too high, and the valuation of nitrogen is lower than the apparent ruling prices in ammoniated fertilizers.

The following analyses giving the composition of the various brands of fertilizers were made by Dr. de Roode, chemist to the Station. There has been a marked improvement in the guarantees of the manufacturers. Last year twenty seven per cent. of the brands of fertilizers offered for sale in the State fell short of the

claims of the manufacturers. This year it has been reduced to thirteen per cent., much too large a proportion, it is true, but commendable progress has been made. It appears this year to be quite evident that the majority of cases of excessive claims is probably due to irregular mixing of the goods, and not due to a shortage of ingredients actually supplied by the manufacturers.

The analyses of the samples sent in by the farmers and collected by the agents of the Station at various points in the State, indicate that there is a general effort upon the part of the fertilizer trade to comply very strictly with the provisions of the law which appear to be generally satisfactory to the farmers. The manufacturers now understand their duties quite clearly and the farmers are freely availing themselves of its provisions. The agents over the State generally are exercising care to see that the manufacturers maintain the quality of their goods, and it is doubtful whether the provisions of the law can be much improved upon.

The following table shows the analysis and relative valuation of the various brands of fertilizers sold in the State for the year beginning with Jan. 1, 1892 and extending to Sept. 1, 1892 :

[illegible]

Name of Brand.	Names and Addresses of Manufacturers or General Agents.	Total Phos. Actl pr ct.	Sol. phos.	Acid prct.	Rey. phos.	Av. phos.	Ins. phos.	Nitrogen prct.	Potash.	per cent.	Vitaton.	Av. phos.	Nitrogen.	Potash.	per cent.	Excess of Vitaton.	Excess of Vitaton.
Dissolved S. C. Bone.	Liebig M'fg Co., Carteret, N. J.	14.90	12.77	1.83	14.62	28		2.16	2.07	2.07	322.40	14.00		1.50	1.50	1.60	1.60
Urbana Superphosph. and Potash.	Leontinebach Fer Co., Urbana, O.	11.44	7.21	2.26	10.47	97		2.16	2.07	2.07	28.05	11.00		1.50	1.50	1.60	1.60
Standard Superphosphate.	Lister's Agr. Ch. Wks., Balto., Md.	12.26	6.48	2.22	8.70	56		2.16	2.07	2.07	24.43	10.00		1.50	1.50	1.60	1.60
Harvest Queen.	W. F. & T. Lippitt	11.59	6.01	2.99	9.63	52		2.16	2.07	2.07	21.41	10.00		1.50	1.50	1.60	1.60
Shenandoah.	Md. Fer. & M'fg Co., Balto., Md.	12.05	6.70	2.47	9.17	58		2.16	2.07	2.07	18.60	11.00		1.50	1.50	1.60	1.60
Linden Superphosphate.	"	12.53	8.05	3.37	11.43	10		2.16	2.07	2.07	23.53	10.00		1.50	1.50	1.60	1.60
Ammoniated Bone.	"	12.32	5.74	2.68	8.42	90		2.16	2.07	2.07	21.97	10.00		1.50	1.50	1.60	1.60
Globe Complete Manure.	"	11.44	6.65	1.64	8.30	14		2.16	2.07	2.07	23.00	12.00		1.50	1.50	1.60	1.60
Tornado Fertilizer.	"	12.35	9.04	2.31	11.38	97		2.16	2.07	2.07	23.40	11.00		1.50	1.50	1.60	1.60
Dissolved Phosphate.	"	11.84	12.11	1.24	13.46	1.31		2.16	2.07	2.07	21.40	11.00		1.50	1.50	1.60	1.60
P. G. Am. Superphosphate.	M. C. Airy Manuf'g Co.,	10.82	5.92	3.39	9.31	1.51		2.16	2.07	2.07	18.74	8.00		1.50	1.50	1.60	1.60
Piedmont Raw Bone Mixture.	"	12.01	5.39	2.91	8.34	2.14		2.16	2.07	2.07	15.51	7.00		1.50	1.50	1.60	1.60
Piedmont Diss. Bone Phosphate.	"	10.45	7.38	3.95	11.33	72		2.16	2.07	2.07	17.80	10.00		1.50	1.50	1.60	1.60
Wheat, Oats and Barley Mixture.	Milsum R'ad'g & F. Co., Buffalo, N. Y.	14.61	9.17	5.36	12.53	2.68		2.16	2.07	2.07	23.60	10.00		1.50	1.50	1.60	1.60
Horseshoe Brand Garden C'y Phos.	North Western F. Co., Chicago, Ill.	13.29	3.63	7.49	11.59	1.70		2.16	2.07	2.07	31.63	12.00		1.50	1.50	1.60	1.60
Pine Raw Bone.	"	21.50						2.16	2.07	2.07	36.41	12.00		1.50	1.50	1.60	1.60
H. S. B. Prairie Phosphate.	"	11.95	2.79	5.21	8.00	3.95		2.16	2.07	2.07	22.85	17.63		1.50	1.50	1.60	1.60
Sol. Ammon. Superphos. Lime.	G. Ober & Sons Co., Balto., Md.	11.68	7.12	2.14	9.26	2.42		2.16	2.07	2.07	27.61	17.00		1.50	1.50	1.60	1.60
Farmers' Standard Am't Phosph.	"	11.27	7.37	2.65	10.02	1.25		2.16	2.07	2.07	26.47	15.00		1.50	1.50	1.60	1.60
Ober's Shawnee Am't Phosphate.	"	11.75	7.80	2.64	10.41	1.31		2.16	2.07	2.07	25.77	15.00		1.50	1.50	1.60	1.60
Ober's Diss. Bone Phosphate S. C.	"	15.40	10.17	4.33	14.50	90		2.16	2.07	2.07	23.71	15.00		1.50	1.50	1.60	1.60
Red Bag Fertilizer.	W. S. Powell & Co.,	11.46	8.61	2.42	11.03	4.22		2.16	2.07	2.07	28.82	17.00		1.50	1.50	1.60	1.60
Dissolved S. C. Bone.	"	13.78	11.70	1.61	13.31	.47		2.16	2.07	2.07	21.38	17.00		1.50	1.50	1.60	1.60
Bone and Potash.	"	13.38	10.95	1.48	12.43	.95		2.16	2.07	2.07	22.37	17.00		1.50	1.50	1.60	1.60
Excelsior Plant Food.	Ramsberg Fertil. Co.,	11.28	7.41	2.06	10.07	1.21		2.16	2.07	2.07	25.31	17.00		1.50	1.50	1.60	1.60
Dissolved Bone Superphosphate.	"	15.92	9.41	3.60	13.04	2.88		2.16	2.07	2.07	21.69	17.00		1.50	1.50	1.60	1.60
Walker's Dissolved S. C. Phosph.	Raisin Fertilizer Co.,	15.64	12.12	3.62	15.14	.50		2.16	2.07	2.07	22.52	17.00		1.50	1.50	1.60	1.60
Empire Guano.	"	11.90	6.57	1.90	8.07	3.83		2.16	2.07	2.07	26.12	17.00		1.50	1.50	1.60	1.60
Dissolved Bone.	"	14.91	8.54	2.02	11.16	3.71		2.16	2.07	2.07	23.12	17.00		1.50	1.50	1.60	1.60
Acid Phosph. or Diss. S. C. Phos.	"	15.72	11.94	3.03	11.99	.73		2.16	2.07	2.07	21.42	17.00		1.50	1.50	1.60	1.60
Dissolved South Carolina.	Slingluff & Co.,	13.26	10.02	2.09	12.11	1.15		2.16	2.07	2.07	23.07	17.00		1.50	1.50	1.60	1.60
Dissolved S. C. Bone.	Susquehanna Fer Co.,	15.32	12.16	2.25	14.41	.91		2.16	2.07	2.07	22.00	17.00		1.50	1.50	1.60	1.60
Miller's Standard Am. Bone Phos.	"	10.37	6.42	2.34	8.76	1.61		2.16	2.07	2.07	20.45	17.00		1.50	1.50	1.60	1.60
National Tobacco Fertilizer.	S. W. Travers & Co., Richmond, Va.	10.93	6.75	2.52	9.27	1.66		2.16	2.07	2.07	24.64	17.00		1.50	1.50	1.60	1.60
"B. B. B." Beef Blood and Bone.	"	10.88	6.84	2.52	9.35	1.52		2.16	2.07	2.07	24.23	17.00		1.50	1.50	1.60	1.60
Standard Acid Phosphate.	"	15.02	12.84	1.97	11.81	.21		2.16	2.07	2.07	23.86	17.00		1.50	1.50	1.60	1.60
Capital Dissolved S. C. Bone.	"	12.23	6.53	4.19	10.72	1.51		2.16	2.07	2.07	18.06	17.00		1.50	1.50	1.60	1.60
Tinsley's Ammoniated Bone.	Jas. G. Tinsley & Co.,	12.78	8.07	2.81	10.88	1.90		2.16	2.07	2.07	22.54	17.00		1.50	1.50	1.60	1.60
Tinsley's Dissolved S. C. Bone.	"	15.53	11.79	1.68	13.47	2.06		2.16	2.07	2.07	22.79	17.00		1.50	1.50	1.60	1.60
Farmers' Choice.	L. P. Thomas & Son Co., Philadel.	11.52	7.25	2.58	9.84	1.68		2.16	2.07	2.07	22.97	17.00		1.50	1.50	1.60	1.60

*Analysis of Samples Sent by
Manufacturers.*

*Guarantee of
Manufacturers.*

Name of Brand.	Name and Address of Manufacturers or General Agents.	Total phos. acid pr ct.	Sol. phos. acid pr ct.	Rev. phos. acid pr ct.	Av' phos. acid pr ct.	Ins. ph's. acid pr ct.	Nitrogen per cent.	Potash, per cent.	V'uat'on per ton.	(T'v) phos acid pr ct.	Av' phos. acid pr ct.	Nitrogen per cent.	Potash, per cent.	Excess of V'uat'on	Def'cy of V'uat'on
Reed, Long & Manning's XXV Bone.	Susquehanna Fertilizer Co	10.65	5.97	2.75	8.72	1.93	1.09	1.40	\$20 65	\$16 91	8.00	.78	1.00	\$3 64	\$
Dissolved S. C. Phosphate.	W. F. & T. P. Lippitt.	16.23	11.81	3.31	13.12	1.11	...	...	24 85	20 18	13.00	...	2.00	3 67	...
High Grade Alkaline Bone.	Old Dominion Guano Co.	12.11	7.39	3.33	10.72	1.39	...	1.98	19 96	18 00	10.00	...	2.00	1 96	...
Ammoniated Bone Phosphate.	Susquehanna Fertilizer Co	11.59	6.87	2.93	9.80	1.79	1.48	1.72	24 09	20 61	9.00	1.24	1.50	3 48	...
Dissolved Bone Phosphate.	Baltimore Guano Co.	16.58	9.30	4.21	13.51	3.07	...	...	23 46	19 80	13.00	...	...	3 66	...
Soluble Bone.	Lechlider Bros.	12.46	.45	7.81	8.26	4.20	.63	...	18 13	19 33	14.14	...	...	...	1 20
Dissolved S. C. Bone.	"	11.42	.67	8.42	9.09	2.33	...	...	15 94	16 48	14.14	...	...	...	1 54
Bone Meal.	Armour & Co.	26.01	...	...	...	...	2.50	...	37 71	35 20	25.00	2.00	...	2 49	...
Bone and Blood.	"	11.21	...	...	...	...	6.44	...	36 94	38 20	14.00	7.00	...	1 26	...
Dissolved Bone.	"	12.45	...	9.30	9.35	3.15	2.19	...	25 09	23 80	12.00	9.00	...	1 29	...
Soluble Bone and Potash	Tygart-Allen Fertilizer Co.	11.07	6.38	3.62	10.00	1.07	...	3.00	19 64	18 00	10.00	...	2.00	1 64	...

